What is claimed is:

1. A method for treating a neurodegenerative disease in a subject comprising:

identifying a target site in the central nervous system that requires modification;

delivering a vector comprising a nucleotide sequence encoding a glutamic acid decarboxylase (GAD) to the target site in the central nervous system; and

expressing the GAD in the target site to treat or reduce the neurodegenerative disease.

2. The method of claim 1, wherein the vector is a viral vector.

3. The method of claim 2, wherein the a viral vector is selected from the group consisting of adenovirus vectors, herpes virus vectors, parvovirus vectors, and lentivirus vectors.

4. The method of claim 2, wherein the a viral vector is an adeno-associated viral vector.

5. The method of claim 1, wherein the vector is a non-viral vector.

6. The method of claim 5, wherein the non-viral vector is a liposome-mediated delivery vector.

7. The method of claim 1, wherein the vector is delivered using stereotaxic delivery.

8. The method of claim 1, wherein the target site in the central nervous system is a region of the brain.

9. The method of claim 8, wherein the region of the brain is selected from the group consisting of basal ganglia, subthalamic nucleus (STN), pedunculopontine nucleus (PPN), substantia nigra (SN), thalamus, hippocampus, amygdala, hypothalamus, cortex, and combinations thereof.

10. The method of claim 8, wherein the region of brain is the hippocampus.

11. The method of claim 8, wherein the region of brain is the amygdala.

12. The method of claim 8, wherein the region of brain is the hypothalamus.

13. The method of claim 1, wherein the neurodegenerative disease is selected from the group consisting of Parkinson's disease, Alzheimer's disease, senile dementia, Amyloid Lateral Schlerosis (ALS), and epilepsy.

14. A method for treating epilepsy in a subject comprising:

identifying one or more regions of the brain that require modification;

delivering a vector comprising a nucleotide sequence encoding a glutamic acid decarboxylase (GAD) to the region of the brain; and

expressing the GAD in the region of the brain to treat or reduce epilepsy.

15. The method of claim 14, wherein the vector is a viral vector.

16. The method of claim 15, wherein the a viral vector is selected from the group consisting of adeno-associated viral, adenovirus vectors, herpes virus vectors, parvovirus vectors, and lentivirus vectors.

17. The method of claim 15, wherein the a viral vector is an adeno-associated viral vector.

18. The method of claim 14, wherein the vector is a non-viral vector.

19. The method of claim 18, wherein the non-viral vector is a liposome-mediated delivery vector.

20. The method of claim 14, wherein the region of the brain is selected from the group consisting of basal ganglia, subthalamic nucleus (STN), pedunculopontine nucleus (PPN), substantia nigra (SN), thalamus, hippocampus, amygdala, hypothalamus, cortex, and combinations thereof.

21. The method of claim 14, wherein the region of brain is the hippocampus.

22. The method of claim 14, wherein the region of brain is the amygdala.

23. The method of claim 14, wherein the region of brain is the hypothalamus.

24. A method for treating epilepsy in a subject comprising:

identifying one or more regions of the brain that require modification;

delivering an adeno-associated viral (AAV) vector comprising a nucleotide sequence encoding a glutamic acid decarboxylase (GAD) to the region of the brain; and

expressing the GAD in the region of the brain to treat or reduce epilepsy.

25. The method of claim 24, wherein the adeno-associated viral vector is selected from the group consisting of AAV-1 AAV-2, AAV-3, AAV-4, AAV-5 and AAV-7.

26. The method of claim 25, wherein the adeno-associated viral vector is AAV-2.

27. The method of claim 24, wherein the region of the brain is selected from the group consisting of basal ganglia, subthalamic nucleus (STN), pedunculopontine nucleus (PPN), substantia nigra (SN), thalamus, hippocampus, amygdala, hypothalamus, cortex, and combinations thereof.

28. The method of claim 27, wherein the region of brain is the hippocampus.

29. The method of claim 27, wherein the region of brain is the amygdala.

30. The method of claim 27, wherein the region of brain is the hypothalamus.

31. A method of altering expression of glutamic acid decarboxylase (GAD) in a region of the central nervous system (CNS) of a subject with epilepsy comprising:

identifying a target site in the CNS that requires modification;

delivering a vector comprising a nucleotide sequence encoding glutamic acid decarboxylase (GAD) to the target site in the CNS; and

expressing GAD in the target site.

32. The method of claim 31, wherein the vector is a viral vector.

33. The method of claim 31, wherein the a viral vector is selected from the group consisting of adenovirus vectors, herpes virus vectors, parvovirus vectors, and lentivirus vectors.

34. The method of claim 31, wherein the a viral vector is an adeno-associated viral vector.

35. The method of claim 31, wherein the vector is a non-viral vector.

36. The method of claim 35, wherein the non-viral vector is a liposome-mediated delivery vector.

37. The method of claim 31, wherein the vector is delivered using stereotaxic delivery.

38. The method of claim 31, wherein the target site in the central nervous system is a region of the brain.

39. The method of claim 38, wherein the region of the brain is selected from the group consisting of basal ganglia, subthalmic nucleus (STN), pedunculopontine nucleus (PPN), substantia nigra (SN), thalmus, hippocampus, amygdala, hypothalamus cortex, and combinations thereof.

40. The method of claim 39, wherein the region of brain is the hippocampus.

41. The method of claim 39, wherein the region of brain is the amygdala.

42. The method of claim 39, wherein the region of brain is the hypothalamus.

43. A vector for expression of GAD in cells of the central nervous system comprising:

a tissue specific promoter operably linked to a nucleotide sequence encoding GAD; and

a post-transcriptional regulatory element.

44. The vector of claim 43, wherein the vector is selected from the group consisting of adeno-associated vector, adenovirus vectors, herpes virus vectors, parvovirus vectors, and lentivirus vectors.

45. The vector of claim 43, wherein the vector is an adeno-associated vector.

46. The vector of claim 43, wherein the promoter is the neuron specific enolase (NSE) promoter.

47. The vector of claim 43, wherein the post-transcriptional regulatory element is the woodchuck post-transcriptional regulatory element.

48. The vector of claim 43, wherein the GAD is selected from the group consisting of GAD-65 and GAD-67.